

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 27 APR 2006

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Applicant's or agent's file reference F18728 AS/JW		FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/IB2005/000153		International filing date (day/month/year) 21.01.2005	Priority date (day/month/year) 23.01.2004	
International Patent Classification (IPC) or national classification and IPC INV. E02F3/407 E02F9/22 F16F9/18				
Applicant WALLETT, Grant, Alan, David				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 7 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 11 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 22.11.2005		Date of completion of this report 26.04.2006		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Laurer, M Telephone No. +49 89 2399-7079		



INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/IB2005/000153

Box No. I Basis of the report

1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

4-8, 12	as originally filed
1-3, 9-11	received on 24.11.2005 with letter of 22.11.2005

Claims, Numbers

1-8	received on 24.11.2005 with letter of 22.11.2005
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Drawings, Sheets

1/4, 3/4, 4/4	as originally filed
2/4	received on 24.11.2005 with letter of 22.11.2005

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2005/000153

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-8
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement;

1 Novelty and inventive step

- 1.1 In the terms of independent claim 1, US-B1-6219946 (=D1) shows in its figures a bucket (38) for a mechanical shovel (10), the bucket (38) having a hollow body (62) provided with an inlet (located near the teeth 74) for receiving material into its interior and an outlet (82) for discharging material therefrom, the bucket (38) having, secured to the body (62), a door (86) which is movable relative to the body (62) between a closed condition (figure 4) in which it closes the outlet (82) of the bucket (38) so that material cannot be discharged therefrom, and an open condition (figure 5) in which it permits discharge under gravity of material from the bucket (38), the bucket (38) also including at least one buffering device (98) operatively connected between the body (62) and the door (86) of the bucket (38) for buffering movement of the door (86) relative to the body (62, see figures 4 and 5 and the relevant parts of the description), each buffering device (98) is in the form of a working fluid-containing telescopically extensible and retractable piston-and-cylinder assembly (102) including a cylinder (102) and a piston (122) longitudinally slidably received in the cylinder (102), the piston (122) having a piston rod (138, 150, 146) projecting longitudinally from an end of the cylinder (102, see figures 2 and 3) and a piston head (134, 122) located in the cylinder (102) and slidably sealingly engaging the wall (106) of the cylinder (102), two compartments (126, 130) containing working fluid being defined respectively between the piston head (134, 122) and the respective opposite ends of the cylinder (102), the piston-and-cylinder assembly (102) being operatively connected between the body (62, see bracket 174) and the door (86, see bracket 170) such that opening of the door (86) causes the piston-and-cylinder assembly (102) to retract (see figure 5) and closing of the door (6) causes it to extend (see figure 4), the piston-and-cylinder assembly (102) also including a fluid flow control assembly (158, 166) via which the two compartments (126, 130) are in fluid flow communication with each other (see figures 2 and 3), the fluid flow control assembly (158, 166) being constructed and arranged to cause fluid flow through the fluid flow control assembly (158, 166) from the compartment (130) remote from the end (at 146) of the cylinder (102) from which

the piston rod (146) projects to the compartment (126) adjacent the end of the cylinder (102) from which the piston rod (at 146) projects during opening of the door (86) and to cause throttled (throttle 158, see columns 5 to 6 of D1) fluid flow through the fluid flow control assembly (156, 166) from the compartment (126) adjacent the end of the piston from which the piston rod (at 146) projects (figures 2 and 3) to the compartment (130) remote from the end of the cylinder (102) from which the piston rod projects (at 146) during closing of the door (86, when the rod 146 extends from the cylinder 102).

The claimed subject-matter is thus novel over D1.

- 1.2 The distinguishing technical features of current claim 1 over the disclosure of D1 can be summarised as:

The throttled flow is throttled relative to the fluid flow during opening of the door, such that movement of the door towards its closed condition is buffered relative to movement of the door towards its open condition.

- 1.3 The resulting technical effects can be summarised as:

Dampening the movement of a bucket door in closing direction and avoiding braking the door during opening and discharge of the bucket;

- 1.4 The objective technical problem can be formulated as:

Improving dampening of such a bucket door;

- 1.5 US-A-5974705 (=D2) shows in figures 6 and 9 a valve block 99 for use with a rotary hydraulic damper 60 for dampening the movement of a bucket door (see D2, figure 1). This valve block enables communication between two hydraulic volumes (72A and 72B) of the hydraulic dampener. The fluid flow during opening of the bucket door (flow direction from the "return port" to the "pressure port" in figure 9) is effected through the "check valve" substantially unrestricted. During closing of the bucket door (flow direction from the "pressure port" to the "return port" in figure 9) the fluid flow is effected through the "flow control valve" in an adjustable restricted way (see symbol for the adjustable throttle in figure 9). A skilled person starting from D1 and wishing to improve the dampening of a bucket door would install the valve block 99 of D2 into D1 and would arrive at the claimed subject-matter without involving an inventive step.

- 1.6 Moreover, the use of a linear hydraulic cylinder instead of a rotary hydraulic actuator would be one of several straight forward solutions for a skilled person. Thus, the integration of a linear cylinder into the disclosure of D2 would be a routine design modification for a skilled person without the involvement of an inventive skill. Thus, the claimed subject-matter of claim 1 does not comply with Article 33(3) PCT.
- 1.7 The features of the dependent claims 2-8 do not contribute to an inventive step because they are at least shown in one of documents D2 or D1.
- Claim 2: Throttling means and a non-return valve are shown in figure 2 of D2 for the described function;
- Claim 3: Adjustable throttle device (101, flow control valve with symbol for adjustability), see D2, figure 9;
- Claim 4: Pressure relief valve (103) in figures 6 and 9 of D2;
- Claim 5: Door hinge (90) for connecting the door (86) to the bucket body (62), see figure 4 and 5 of D1;
- Claim 6: A fluid flow control assembly (166) arranged outside of the cylinder is shown in D1, figure 2;
- Claim 7: An integrated fluid flow control assembly (166) is shown in D1, figure 3;
- Claim 8: A releasable latch (42) is known from D2, column 5, lines 7 to 11;

Re Item VII

Certain defects in the international application;

- 2.1 No document (such as D1 and D2) reflecting the prior art has been cited in the description Rule 5.1(a)(ii) PCT.
- 2.2 The formulation of the independent claim does not comply with Rule 6.3 PCT, because the preamble of the independent claim should comprise all the features (see paragraph 1.1) known from the prior art D1 and the characterising portion should comprise the features characterising the invention.

Re Item VIII

Certain observations on the international application;

- 3.1 The term "dampening" instead of "buffering" in the whole claims seems to be more appropriate for the intended meaning (PCT-Guidelines Chapter 5.31).
- 3.2 The application contains an embodiment on page 9, second paragraph in which the claimed invention is applied to a piston-cylinder assembly. Said piston-cylinder assembly comprises a rod-side chamber and a piston-side chamber (without a rod). Movement of the piston in the cylinder causes a fluid flow from one chamber to the other. Due to the differences of the chambers, with or without a rod, the displaced volume differs with respect to the flow direction (expansion or retraction of the piston-cylinder assembly). In a closed system with an incompressible fluid there must be provided means for compensating such volume differences. The application is silent about these means. This embodiment, which has never been searched and thus, cannot be made subject of examination (see Rule 66.1(e) PCT) is considered as not sufficiently disclosed for being carried out. Claim 1 does not comprise any features for compensating such volume flow differences. Thus, the application contains an inconsistency between claim 1 and the said embodiment on page 9, second paragraph (PCT-Guidelines Chapter 5.55).